

#### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

### (19) World Intellectual Property Organization

International Bureau



### | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888 | 1888

(43) International Publication Date 26 February 2004 (26.02.2004)

**PCT** 

## (10) International Publication Number WO 2004/016104 A1

(51) International Patent Classification<sup>7</sup>: 1/275, 1/308

A23L 1/212,

112013 1/212

(21) International Application Number:

PCT/IL2003/000678

(22) International Filing Date: 17 August 2003 (17.08.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

151342

19 August 2002 (19.08.2002) Π

(71) Applicant (for all designated States except US): LY-CORED NATURAL PRODUCTS INDUSTRIES LTD. [IL/IL]; P.O. Box 320, 84102 Beer-Sheva (IL).

(72) Inventors; and

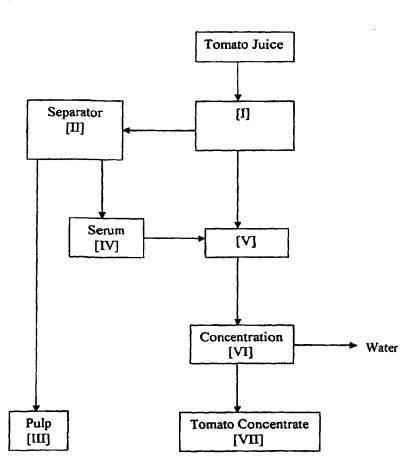
(75) Inventors/Applicants (for US only): ZELKHA, Morris

[IL/IL]; 10 Hadar Street, 84965 Omer (IL). HARTAL, Dov [IL/IL]; 6 Ugarit Street, Tel Baruch, 69016 Tel-Aviv (IL). ALBERT, Zvi [IL/IL]; 14 Keren Kayemet Street, 27093 Kiryat Bialik (IL).

- (74) Agents: MUSHKIN, Noam et al.; Intellectual Property Department, P.O.Box 1646, 84100 Omer (IL).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: INDUSTRIAL TOMATO PROCESS AND PRODUCT OBTAINED THEREOF



(57) Abstract: The invention relates to a tomato pulp composition wherein the particle size is not greater than 2.5 which does not contain seeds or peels from the tomato and has a lycopene concentration which is 5 to 15 folds higher than the lycopene concentration in the tomatoes from which said pulp is obtained. invention further provides an industrial process for obtaining tomato pulp and tomato concentrate from tomato juice. The invention further provides a method for controlling the viscosity and lycopene concentration of tomato products, tomato concentrate or modified tomato juice, by separating a part of the pulp from the tomato juice from which said tomato products are obtained.



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### **Declarations under Rule 4.17:**

- as to the identity of the inventor (Rule 4.17(i)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,

- MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to applicant's entitlement to apply for and be granted a
  patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

#### Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23L1/212 A23L1/275

A23L1/308

According to International Patent Classification (IPC) or to both national classification and IPC

#### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) IPC 7 A23L

Category ° Citation of document, with indication, where appropriate, of the relevant passages

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA

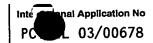
C. DOCUMENTS CONSIDERED TO BE RELEVANT

- 1			
х	US 5 837 311 A (RAVEH YIGAL ET 17 November 1998 (1998-11-17) cited in the application figures 1,2,6 column 3, line 25 - line 56	AL)	5–16
X	EP 0 608 027 A (MAKHTESHIM CHEM 27 July 1994 (1994-07-27) cited in the application the whole document	WORKS LTD)	5,10-16
X	US 4 670 281 A (BRADLEY DONALD E 2 June 1987 (1987-06-02) column 4, line 32 - line 62	-/	5,7
X Furt	ther documents are listed in the continuation of box C.	X Patent family members are listed	d in annex.
"A" docum consider filing and citatic "O" docum other	ent defining the general state of the art which is not dered to be of particular relevance document but published on or after the international date ent which may throw doubts on priority claim(s) or n is cited to establish the publication date of another on or other special reason (as specified) nent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but than the priority date claimed	"T" later document published after the interpretation or priority date and not in conflict with cited to understand the principle or the invention.  "X" document of particular relevance; the cannot be considered novel or cannot to expensive step when the description of the cannot be considered to involve an inventive and document is combined with one or ments, such combination being obvious the art.  "&" document member of the same pater	h the application but neory underlying the claimed invention of be considered to ocument is taken alone claimed invention nventive step when the nore other such docuous to a person skilled
Date of the	e actual completion of the international search	Date of mailing of the international s	earch report
	27 November 2003	09/12/2003	
Name and	mailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Authorized officer  Vuillamy, V	

Relevant to claim No.

		PC U3/000/8	
C.(Continua	ation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
A	WO 02 21935 A (ZELKHA MORRIS ; HARTAL DOV (IL); SEDLOV TANYA (IL); LYCORED NATURAL PR) 21 March 2002 (2002-03-21) page 3, line 29 - page 5, line 30	10-12	
A	SULC D: "VERGLEICHENDE UNTERSUCHUNGEN AN TOMATENKONZENTRATEN, HERGESTELLT NACH DEM KLASSISCHEN UND NACH DEM MODIFIZIERTEN SERUM-VERFAHREN" FLUSSIGES OBST, SCHOENBORN, DE, vol. 43, no. 9, 1976, pages 334-338,340,34, XP008021486 ISSN: 0015-4539 page 335; figure 1	1	
A	TANGLERTPAIBUL T ET AL: "FLOW PROPERTIES OF TOMATO CONCENTRATES: EFFECT OF SERUM VISCOSITY AND PULP CONTENT" JOURNAL OF FOOD SCIENCE, INSTITUTE OF FOOD TECHNOLOGISTS. CHICAGO, US, vol. 52, no. 2, 1 March 1987 (1987-03-01), pages 318-321, XP002043494 ISSN: 0022-1147 cited in the application the whole document	5	

# INTERNATIONAL SEARCH REPORT ation on patent family members



Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5837311	A	17-11-1998	IL AU AU WO	107999 A 690201 B2 1513195 A 9516363 A1	08-02-1998 23-04-1998 03-07-1995 22-06-1995
EP 0608027	A	27-07-1994	IL AT DE DE DK EP ES JP PT	104473 A 217492 T 69430601 D1 69430601 T2 608027 T3 0608027 A2 2176219 T3 7308168 A 608027 T	31-10-1996 15-06-2002 20-06-2002 30-01-2003 09-09-2002 27-07-1994 01-12-2002 28-11-1995 30-09-2002
US 4670281	Α	02-06-1987	IT	1185063 B	04-11-1987
WO 0221935	Α	21-03-2002	AU EP WO	9219801 A 1317189 A2 0221935 A2	26-03-2002 11-06-2003 21-03-2002